UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,207	01/15/2002	Hong Wan	P01,0367	5757

128 7590 09/20/2005

HONEYWELL INTERNATIONAL INC.
101 COLUMBIA ROAD
P O BOX 2245
MORRISTOWN, NJ 07962-2245

EXAMINER	
EASTHOM, KARL D	
ART UNIT	**PAPER NUMBER**
2832	

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/047,207	WAN, HONG	
	Examiner	Art Unit	
	Karl D. Easthom	2832	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-37* is/are pending in the application.

4a) Of the above claim(s) *18-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-17 & 31-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 3-6 and 37 are rejected under 35 U.S.C. 102(e) as anticipated by Bohlinger et al. (6,529,114). Bohlinger discloses the claimed invention at Fig. 1 with input strap 14, first, second, third, and fourth magnetoresistors 38, 40, 36, 34, respectively. The supply terminals are Vcc(Y) and Gnd, with isolator inputs 16,18 and outputs Vout+y, Vout-y. The current in the strap portion over the resistors 22, 24, 30, 32 flows parallel to the direction of current flowing in the first through fourth magnetoresistors, meeting claim 37. These portions are the elongated portions of the turns of the input strap meeting claims 4-5 since they are near where near is relative. In claim 3, there is a plurality of turns. In claim 6, see claim 1, where the two are in separate planes. While the input strap 54 is described as a reset strap, it still meets the claim since it can function as an input strap as it is isolated, and also produces fields in 38, 40, opposite from that of 36, 34.

3. Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Dettmann et al. (5,719,494). Dettmann discloses the claimed invention at Fig. 1 as prior art, with first and second isolator input terminals carrying current It, Ist, first and second isolator output terminals Uq, Ua, first and second supply terminals Ub, and first through fourth magnetoresistors 1-4, meeting the claim as simple application of the right-hand rule shows. That is, a DC current entering at It would both produce opposite fields in the first and second magnetoresistors as compared to the third and fourth, as it must, like applicant's Fig. 1.

4. Claims 3-17, and 31-37 are rejected under 35 U.S.C. 102(b) as anticipated by Wan. (5952825). Wan discloses the claimed invention at Fig. 1 where the input strap is strap 54 , and the first, second, third and fourth magnetoresistors are 24, 26,28 and 30 respectively. The supply terminals and isolator outputs are the terminals of the bridge of magnetoresistors. That is, while the input strap 54 is described as a reset strap, it still meets the claim since it can function as an input strap as it is isolated, and also produces fields in 28, 30 opposite from that of 24, 26. The elongated portions of claims 4-5 are at the top and bottom of Fig. 1. Current through those portions is parallel as claimed, meeting claims 11, 36 and 37. In claims 9-10, 16-17, and 34-35, the reset coil is the coil 72, 74 having the portions claimed, running across the length of the magnetoresistors. In claims 11 and 32-33, the first and second portions are the portions at the top and bottom of Fig. 1 that run across the length of the magnetoresistors. For claim 11, the two portions run to the ends of the isolator where ends define ends of the magnetoresistors, and the two portions of at least one turn

have current opposite in the different resistors 24 and 28, for example. Finally note that Fig. 1 of Wan is remarkably similar to Fig. 4 of applicant's specification. It appears that there are some structural differences between the input strap 54 of Wan and 70 of applicant, but applicant has the burden to explain the difference in terms of how the claims are not met by the input strap 54 of Wan. (Note too the discussion of Pant '590, where that "set/reset" strap is similar to that of Wan and isolates as noted.) For claim 31, "tracks" is a broad term, and the resistors each change to a maximum value when a pulse occurs due to the fields generated in the input coil so that there is a tracking. Since the setup is the same as that of applicant, there would appear to be tracking via a DC current also due to the vector sum of fields appearing. If this were not so, a pulse would not be required for setting/resetting. For claim 36, see also Fig. 1a, the semiconductor substrate is 100 with the input strap 60 (set/reset) above same, and dielectric 104, while the first and second magnetoresistors are on one side of the device, across the center, with the other two on the other side, so that the fields are generated toward the center and opposite as claimed.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 3-8, 11-15, 31-37 are rejected under 35 U.S.C. 103 as obvious over Daughton et al. (6,300617) in view of Bohlinger et al. (6,529,114) . (Here it is assumed that claims 31-35 depend from claim 3). Daughton discloses the claimed

invention, except the first and second magnetoresistors, and the third and fourth magnetoresistors, in series with the power supply terminals. Bohlinger discloses the arrangement as noted above as a typical setup for magnetoresistor direction sensors, so well known as to be called by a generic name, Wheatstone bridge, similar to that of Daughton for measuring magnetic signals, so that it would have been obvious to employ that where there is a finite way to connect the four resistors in a bridge. The remaining claimed invention is at Daughton Fig. 1A where the input strap is 26B, and the magnetoresistors are 23A-23D, with the fields in 23A and 23D opposite to those in 23B or 23C (see top of col. 20 also). The supply terminals and isolator outputs are the terminals of the bridge of magnetoresistors. For claims 3-5, 12, and 32-33, the turns of 29 meet the claim. For claims 4 and 11, the left-hand and right-hand sides of the coil meet the claim. Or also, see col. 18, lines 40-45, and disclosing major portions of the coil of the input strap along the elongated portions. For claim 6, the layers are seen at Fig. 1A, while for claims 7-8, and 13-15, see the dielectric 27 at Fig. 2B, col. 18, line 10-25, and lines 55-65 (second dielectric). For claim 31, the tracking occurs due to the coil arrangement similar to that of applicant. Claim 36 follows from the elements noted. The silicon substrate is 11.

7. Applicant's arguments filed 8/10/05 are not persuasive. As to Bohlinger, applicant argues that the current through the coil 14 does not flow in a direction parallel to the direction of current flow through the four magnetoresistors 34, 36, 38, 40. This is not correct, as noted above, the current in the strap portion over the resistors 22, 24, 30, 32 flows parallel to the direction of current flowing in the first through fourth

magnetoresistors 34, 36, 38, 40. Applicant's argument does not address this coil portion. As to claims 4 and 5, there are two elongated portions of the coil. Again, applicant addresses the portions over the magnetoresistors 34, 36, 38, and 40, but does not address the parallel portion over the resistors 22, 24, 30, and 32. With respect to Dettmann, applicant does not address the Examiner's rejection based upon Fig. 1, labeled Prior Art, but argues apparently to a rejection he advances based upon Fig. 2.

With respect to Wan and claims 11, 36 and 37, applicant argues that the strap 54 does not have current running parallel to the direction of current through the magnetoresistors. This is not correct, for the strap, a square coil, can carry current necessarily must carry current in four directions, two of which are parallel to the magnetoresistors. Applicant's argument ignores the noted parallel direction, but focuses on the perpendicular direction. Applicant's argument with respect to claims 4-5 is that the parallel portion of the coil 54 is not near to the elongated magnetoresistive sensors, but near is relative, and anything on the small sized chip is near. As to claims 9 and 16, applicant argues that the strap 70 does not run across the magnetoresistors. This is not correct since it is under all of them, running across the length.. It will momentarily set the direction of magnetization along the width of the magnetoresistors. For claim 17, applicant argues that the field in strap cannot be momentary, but this is not correct since it will follow a current field.

With respect to the Daughton in view of Bohlinger patent, applicant argues there is no motivation for the rejection. The examiner has stated that the arrangement

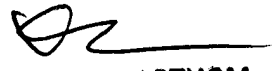
is so well known as to be called by a generic name – a Wheatstone bridge. There are only very few finite ways to connect four resistors in a Wheatstone bridge. Daugthon and Bohlinger disclose two. They have similar functions, operate in similar manners, and thus, it would have been obvious to employ one for the other. Applicant's remaining arguments for all claims focus on reasons why one would not make the substation, but the motivation for it is the germane focus. If Daughton discloses an unusual setup, this does not defeat the motivation. Applicant also argues why Daughton does not meet the remaining claims, but it is the combination that meets the claims.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl D Easthom whose telephone number is (571) 272-1989. The examiner can normally be reached on M-Th, 5:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin Enad can be reached on (571) 272-1990. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Karl D Easthom



KARL D. EASTHOM
PRIMARY EXAMINER
AU 2832